

REMARKS

In response to the Official Action of August 19, 2005, claims 1 and 13 have been amended in a manner which is believed to distinguish these claims over the cited. Support for the amendment to claims 1 and 13 is seen in Figures 1 and 3 and in the specification, including page 12, line 28 through page 13, line 4, and page 13, line 28 through page 14, line 7. As a result, it is respectfully submitted that claims 1-29 as currently presented are also distinguished over the cited art.

Claims 1-29 stand rejected under 35 U.S.C. §102(b) as being anticipated in view of US 5,966,020, Rampone et al (hereinafter Rampone). Applicant respectfully submits, that Rampone does not anticipate the claimed invention, and the claim rejections are traversed based on the following reasons.

As correctly noted by the Examiner, Rampone relates to a method for electrical testing printed circuit boards (see column 1, lines 55-60). Rampone proposes testing a single electrical contact of a surface mount technology (SMT) component and a substrate board. Rampone provides a split-pad land pattern with a plurality of mounting pads coupled to a single electrical contact of the component (see column 3, lines 25-30). According to Rampone, an SMT socket 250 includes a plurality of electrical contacts, in which a first group of electrical contacts 270 and 271 are separated by a receptacle area 280 (see column 5, lines 38-40). The electrical contacts are interconnected by a plurality of mounting pads through solder joints 290 (see column 5, lines 4-46). Each solder joint between an electrical contact of the SMT component and the substrate board can be separately checked for solder short defects (column 5, lines 45-51).

During operation, current flow through the mounting pads 260 is illustrated in Figure 7. Current would pass into the electrical contact 410 of the SMT component through a first mounting pad 261₁, and its solder joint 291₁. From the electrical contact 410, current would propagate through the solder joint 291₂ to the second mounting pad 261₂ also coupled to the electrical contact 410. From the second mounting pad 261₂, current would propagate through

both a second interconnect 415, and the second access pad 335 to the second probe 420 so as to be measured. If a predetermined amount of current is received by the second probe 420, the electrical contact is properly attached, mechanically and electrically, to the second mounting pad 261₂ (see column 6, lines 32-43).

As set forth in the Official Action, elements 290 and 291 are considered to be coupling elements, while electrical contacts 270, 271, 260, 261, pads 315 and 335, and IC pads are considered to be support elements. Applicant respectfully submits, that this interpretation is not correct. First of all, according to the invention, the circuit board is electrically coupled with the integrated circuit package by coupling elements. Using this notation, in Rampone, electrical coupling of the printed circuit board to the integrated circuit is done by the elements 315, 310, 261, 291, 371, 330, 335. All of these elements provide direct electrical coupling between the integrated circuit package and the printed circuit board. Then, however, no support elements at all are provided according to the Rampone reference.

It has to be clearly stated that the electrical coupling between the printed circuit board and the integrated circuit is at least provided by the elements 261 and 290. These elements provide direct electrical connection between the circuit board and the integrated circuit.

According to the Rampone reference, the mounting pads are considered as split mounting pads, which uniquely correspond to each electrical contact of the SMT socket. For each split mounting pad, one mounting pad is dedicated only for testing purposes, while at least one other may be coupled to a trace for interconnecting other components (see column 4, lines 58-67). Thus, at least one of the mounting pads 290, 291 is a coupling element according to the invention. Then, one other mounting pad 290, 291, and the electrical contact 270, 271 may be considered as support elements. When interpreting one mounting pad and the electrical contact as a support element, however, Rampone does not propose to electrically connect at least two of said support elements with each other on the side of the integrated circuit package as required by claim 1. In contrast, Rampone proposes to separate the electrical contacts 270 and 271 from each other by a receptacle area 280 (see column 5, lines 38-41). Therefore, Rampone clearly states

that no electrical connection between support elements on the side of the integrated circuit package is provided.

In contrast to the present invention, where physical values between said support elements are picked-off, Rampone proposes to pick-off physical values between mounting pads 260, 261. According to the above interpretation, a physical value between a support element, and a coupling element is picked-off according to Rampone, and not, as claimed by the invention, between support elements themselves.

The invention clearly distinguishes between electrical coupling elements and mechanical support elements. The invention as claimed in claim 1 proposes to use mechanical properties of mechanical support elements to conclude a condition of electrical coupling of the circuit package based on the mechanical properties of said support elements. Unlike the present invention as claimed, Rampone proposes to use the electrical coupling elements both for electrically coupling the integrated circuit package with the printed circuit board, and to pick-off physical values. Rampone does not teach the step of concluding a condition of electrical coupling of said integrated circuit package with said circuit board from said determined mechanical properties of said support elements, but rather proposes concluding a condition of said electrical coupling of said integrated circuit package with said circuit board from determined electrical properties of electrical connecting elements.

Therefore, the teaching of Rampone differs significantly from the present invention as claimed. The present invention provides the effect that electrical connection between a printed circuit board and an integrated circuit package are not used for testing at all. The invention proposes two completely different elements; namely, support elements; which do not constitute any electrical coupling between the printed circuit board (PCB), and the integrated circuit (IC) package. The support element provide only testing the electrical coupling between the PCB and the IC. A person of ordinary skill in the art, with knowledge of Rampone, would not consider an inventive teaching without being inventive himself. In contrast, as Rampone already provides a solution for testing electrical connections between a PCB and an IC, there is no indication for the

person of ordinary skill in the art to look for a different solution. It is therefore respectfully submitted that Rampone does not anticipate the invention solution, but rather leads the person of ordinary skill away from the inventive solution.

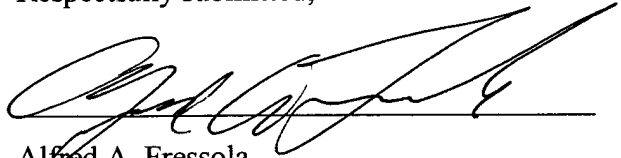
Independent claim 13 has been amended in a manner similar to that of method claim 1, and for similar reasons, it is believed to be neither anticipated nor suggested by Rampone.

Since independent method claim 1 is believed to be distinguished over Rampone, it is respectfully submitted that dependent claims 2-12, 28 and 29, which all ultimately depend from method claim 1, are also distinguished over Rampone. Similarly, since independent claim 13 is believed to be distinguished over Rampone, it is respectfully submitted that dependent claims 14-26, and consumer electronic device claim 27 are also distinguished over Rampone.

In view of the foregoing, it is respectfully submitted that the present application as amended is in condition for allowance and such action is earnestly solicited.

The undersigned respectfully submits that no fee is due for filing this Amendment. The Commissioner is hereby authorized to charge to deposit account 23-0442 any fee deficiency required to submit this paper.

Respectfully submitted,



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